

Advanced Algebra
Semester I Exam Review

Name _____

_____1. Which of the following relations is a function?

$$A = \{(2,3) (3,5) (2, 7)\} \quad B = \{(5, -1)(3, 1) (1, 3)\}$$

- a. A
- b. B
- c. Both A & B are functions
- d. Neither A & B are functions

_____2. The graph of $y = |x + 4| + 3$

- a. translates 4 units to the right and 3 units up from the parent graph
- b. translates 3 units to the left and 4 units up from the parent graph
- c. translates 4 units to the left and 3 units up from the parent graph
- d. translates 3 units to the right and 4 units up from the parent graph

_____3. For which set of points does the graph of the line containing them have a slope of zero?

- a. (4,3) and (4,-3)
- b. (4,-3) and (4, -3)
- c. (4, 3) and (-4, 3)
- d. (-4,3) and (3,4)

_____4. Evaluate $f(x) = x^2 - 2x + 3$ if $x = -1$

- a. 4
- b. 0
- c. 3
- d. 6

_____5. Determine the vertex of $y = |x - 2| - 1$

- a. (2, -1)
- b. (-2, -1)
- c. (2, 1)
- d. (2, -1)

Solve.

6. Write an equation of a line in slope-intercept that contains (4, -2) and (6, 6).

7. Write an equation of a line in slope-intercept form that is perpendicular to $y = \frac{1}{2}x + 4$ and has the same y-intercept as $2x - 5y = -15$.

8. a. $|x - 2| < 5$

b. $|2x + 1| > 7$

9. a. $\frac{5}{2}x - y = 5$
 $4y = 3x - 6$

b. $5.5x + 7.5y = 930$

$0.12x + 0.15y = 19.2$

10. $\frac{y - 2}{3} - \frac{2y + 1}{4} = \frac{5}{6}$

$$m = \frac{8}{4} = 2$$

$$y + 2 = 4(x - 4)$$

$$y + 2 = 4x - 16$$

$$y = 4x - 18$$

7. Write an equation of a line in slope-intercept form that is perpendicular to $y = \frac{1}{2}x + 4$ and has the same y-intercept as $2x - 5y = -15$.

$$m = -2$$

$$b = 3$$

$$-5y = -2x - 6$$

$$y = \frac{2}{5}x + 3$$

$$y = -2x + 3$$

8. a. $|x - 2| < 5$

$$x - 2 < 5 \text{ and } x - 2 > -5$$

$$x < 7 \text{ and } x > -3$$

$$-3 < x < 7$$

$$-3 < x < 7$$

b. $|2x + 1| > 7$

$$2x + 1 > 7 \text{ or } 2x + 1 < -7$$

$$2x > 6$$

$$2x < -8$$

$$x > 3$$

$$x < -4$$

$$x > 3 \text{ or } x < -4$$

9. a. $\frac{5}{2}x - y = 5$ $5x - 2y = 10$

$$4y = 3x - 6$$

$$10x - 4y = 20$$

$$-3x + 4y = -6$$

$$7x = 14$$

$$x = 2$$

$$(2, 0)$$

$$10\left(\frac{x-2}{3} - \frac{2y+1}{4}\right) = \frac{5}{6}$$

$$4(4-2) - 3(2+1) = 2(5)$$

b. $5.5x + 7.5y = 930$

$$0.12x + 0.15y = 19.2$$

$$55x + 75y = 9300$$

$$-60x - 75y = -9600$$

$$-5x = -300$$

$$x = 60$$

$$5.5(60) + 7.5y = 930$$

$$330 + 7.5y = 930$$

$$7.5y = 600$$

$$y = 80$$

$$(60, 80)$$

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B 1. Which of the following relations is a function?

$$A = \{(2, 3), (3, 5), (2, 7)\}$$

$$B = \{(5, -1)\}$$

a. A

b. B

c. Both A & B are functions

d. Neither A & B are functions

C 2. The graph of $y = |x + 4| + 3$

a. translates 4 units to the right and 3

b. translates 3 units to the left and 4

c. translates 4 units to the left and 3

d. translates 3 units to the right and 4

C 3. For which set of points does the graph of $f(x) = x^2 - 2x + 3$ pass through?

a. (4, 3) and (4, -3)

b. (4, -3) and (4, -3)

c. (4, 3) and (-4, 3)

d. (-4, 3) and (3, 4)

D 4. Evaluate $f(x) = x^2 - 2x + 3$ if $x = -1$

a. 4

b. 0

c. 3

d. 6

D 5. Determine the vertex of $y = |x - 2| - 1$